

## A review of the genus *Bombycomorpha* C. FELDER & R. FELDER, 1874 with descriptions of a new species and a new subspecies

(Lepidoptera, Lasiocampidae)

by

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**Abstract:** The genus *Bombycomorpha* C. FELDER & R. FELDER, 1874 is reviewed. A new species, *Bombycomorpha dukei* spec. nov. is described from Namaqualand in South Africa (Type locality: Cape, Studer's Pass, Garies), and a new subspecies, *Bombycomorpha bifascia borealis* subspec. nov. from East Africa (Type locality: Kenya, South Ukambani, near Kibwezi). The holotypes are deposited in the Transvaal Museum, Pretoria and the Museum WITT, Munich, respectively. The ♂ lectotype for *Bombycomorpha pallida* DISTANT, 1897, is designated here from BMNH material. The genus now consists of four valid taxa and currently represents the only known member of the Poecilocampinae TUTT, 1902 in the Afrotropics.

**Zusammenfassung:** Die Gattung *Bombycomorpha* C. FELDER & R. FELDER, 1874 wird revidiert. *Bombycomorpha dukei* spec. nov. aus Namaqualand in Südafrika (Typenfundort: Cape, Studer's Pass, Garies) und *Bombycomorpha bifascia borealis* subspec. nov. aus Ostafrika (Typenfundort: Kenya, Süd Ukambani, nahe Kibwezi) werden neu beschrieben. Die Holotypen sind im Transvaal Museum, Pretoria, beziehungsweise im Museum WITT, München, deponiert. Ein Lectotypus ♂ für *Bombycomorpha pallida* DISTANT, 1897 wird aus den Beständen des BMNH festgelegt. Die Gattung besteht demnach aus vier Taxa und sie ist der einzige Vertreter der Poecilocampinae TUTT, 1902 in der afrotropischen Fauna.

**Introduction:** The genus *Bombycomorpha* C. FELDER & R. FELDER, 1874 is well known and thus far, has been considered as being taxonomically stable. Three taxa were known as congeners, although two of them, the type species *B. bifascia* (WALKER, 1855) and *B. nupta* C. & R. FELDER, 1874, were synonymized as far back as 1927 by AURIVILLIUS. Since then, the genus has been accepted as consisting of two members - the patterned *B. bifascia* (WALKER, 1855) and patternless *B. pallida* DISTANT, 1897.

A distinctly different species of *Bombycomorpha* was noticed during revisionary work of the family currently under way by GURKOVICH & ZOLOTUHIN (in prep.). It was found to be endemic to the Western Cape's Namaqualand region and unlike the other, widely distributed members of the genus it is known from only a very few localities. Its description is included in the generic review.

During the review, the examination of specimens also revealed isolated populations of *B. bifascia* (WLK.) in Namibia and East Africa. While the East African specimens could not be differentiated from the more southerly *B. bifascia* (WLK.) on external characters, they were found to differ in the male genitalia, and are here described as a separate subspecies.

**Material and methods:** Approximately 420 specimens were examined from the following institutions' and individuals' collections: Transvaal Museum, Pretoria, South Africa (TMP); South African Museum, Cape Town, South Africa (SAM); National Museums of Kenya, Nairobi, Kenya (NMK); Natural History Museum, London, UK (formerly British Museum of Natural History) (BMNH); Zoologisches Museum der Humboldt Universität, Berlin, Germany (MHUB); Museum WITT, Munich, Germany (MWM) and the private collections of J. G. JOANNOU, Krugersdorp, South Africa (JGJ); J. B. BALL, Cape Town, South Africa (JBB); D. M. KROON, Sasolburg, South Africa (DMK); K. GAINSFORD, Cape Town, South Africa (KG). Additional examinations were made of material preserved in 96% alcohol from the collection of V. ZOLOTUHIN, Uljanovsk, Russia (CVZU).

**Genitalia dissections:** From the above material, a total of 35 genitalia dissections were made using standard dissecting techniques and either mounted in Euparal on glass slides or preserved in vials containing 70% alcohol (9 parts) and glycerol (1 part). Illustrations were all based on Euparal mounted preparations and photographed under magnification using Olympus Camedia C-750 Camera with Soligor Adapter Tube for Olympus and Slide Duplicator for Digital 10 Dptrs modified for object glasses.

**Distribution maps** (figs 1-4) were compiled from JOANNOU (2008). Distribution is indicated by markers representing a resolution of one square degree. The type location is indicated by a star shaped marker while all others are represented by circles. In the case of *B. bifascia* (WLK.) no type locality is indicated due to the original citation simply stating "South Africa".

**Citation of specimen labels:** Label data of type specimens are quoted verbatim; however, the month of capture or eclosion of the adult is given in Roman numerals and the name of the collector or breeder is preceded by leg. throughout.

**Measurements and terminology:** Forewing length was measured to the nearest millimeter and represents the shortest distance between wing base and apex. The ranges given are those of the smallest and largest specimen in the series examined. The number of samples used to calculate average values is indicated by (n = ...). Month and extent of adult emergence for each taxon is illustrated as a graph and is based on the number of records available for each month. The terminology for genitalia is based on KLOTS (1970). Under "Distribution" the main habitat types from which the species were recorded are listed in the case of South African taxa only as this type of detailed information is not readily available for other African countries, using the numbering and classification of MUCINA & RUTHERFORD (2006). A gazetteer at the end of the paper lists all localities from which specimens were examined. It is presented in the hierachial system adopted by JOANNOU & KRÜGER (2009).

**Illustrations:** Plates were produced by A. V. GURKOVICH using CorelPhotoPaint X3 from photographs taken by A. V. GURKOVICH, J. G. JOANNOU and V. V. ZOLOTUHIN. The photographed adult type specimens have not been altered, but in some of the genitalia illustrations, dissecting damage has been digitally reconstructed, taking special care with regard to maintaining original shape and proportions.



### Overview of the genus

*Bombycomorpha* C. & R. FELDER, 1874, in FELDER & ROGENHOFER, Reise östl. Fregatte Novara (Zool.) 2 (Abt.2): pl. 100, fig. 1. Type-species: *Bombycomorpha nupta* C. & R. FELDER, 1874, Reise östl. Fregatte Novara (Zool.) 2 (Abt. 2): pl. 100, fig. 1, by monotypy. *B. nupta* C. & R. FELDER, 1874 is a junior subjective synonym of *Artace bifascia* WALKER, 1855, List Spec. lepid. Ins. Colln Br. Mus. 6: 1493.

**Classification:** AURIVILLIUS (1927) placed *Bombycomorpha* in the subfamily Malacosomatinae (sic! - this should correctly read Malacosominae TUTT, 1902), and its inclusion in this subfamily, or at the lower tribal level, has been perpetuated in all subsequent accounts. It is now removed from the Malacosominae and placed in the Poecilocampinae TUTT, 1902. It represents the first record of this subfamily in the Afrotropics and only the second for the continent as a whole, sharing this status with *Trichiura* STEPHENS, 1828. *Trichiura* is known only from the Atlas Mountains of northern Africa – testimony to its ancient origins. *Bombycomorpha* is placed in the Poecilocampinae on account of the following characteristics:

- Frontoclypeus with central protrusion;
- hindwing Sc anastomizes with Rs forming a small, narrow humeral cell with additional humeral vein;
- fore tibial epiphysis absent;
- in the ♂ genitalia, uncus and gnathos well developed;
- uncus simple not bifurcate;
- aedeagus with bag shaped vesica lacking cornuti;
- in the ♀ genitalia postvaginal plate appears as a simple transverse sclerite and bursa copulatrix without any scobination and signum;
- ductus seminalis arising from caudal part of ductus bursae near antrum;
- caterpillars without short, rigid setae or prominent verrucae, only with uniform flexible setae;
- cocoon strong, parchment-like, incorporating small particles of soil;
- pupa with cremaster, though poorly developed, short and flattened, equipped with a few small, heavily sclerotized hooks protruding laterally.

The exact position of the genus, relative to its congeners, remains poorly defined at this time and can only be determined more precisely after sequencing and analysis of these related groups.

**References:** Previous references include AURIVILLIUS (1930), TOOKE (1935), COLLIER (1936), TAYLOR (1949), TAYLOR (1953), PINHEY (1975), PINHEY (1976), FLETCHER & NYE (1982), KROON (1999), VARI et al. (2002), PICKER et al. (2002).

### Generic characteristics

**Adult - Habitus** (col. pl. 21: 1-20): Vestiture white, legs banded alternately white and yellow-brown. Wings short with rounded, smooth outer margin. Ground colour of wings white to off-white, with or without forewing linear fasciae (absent in *B. pallida* DIST.), consisting of two slightly curved, or straight, dark median lines. A discal spot, of varying size and darkness, is always present. Hindwings patternless, except in males of *B. dukei* spec. nov. which have a diffuse transverse shadow. Underside of both wings a more faint reproduction of the upperside but with a dark costa to the forewing. In *B. dukei* spec. nov. the basal half conspicuously irrorated with darker scales. Sexual dimorphism limited to the ♀ being just slightly larger and more robust, their wing pattern sometimes more poorly defined, the basal fasciae often barely visible. When at rest, the insect adopts a tectiform position with the forewings all but obscuring the hindwings.

Forewing length: (♂) 11-19 mm; (♀) 15-24 mm. In both sexes the smallest being *B. bifascia* (WLK.) and the largest *B. dukei* spec. nov..

**Head:** Rough-scaled; Eyes large, glabrous; Labial palps inconspicuous; Frontoclypeus with sclerotized conical to pyramidal keel used to cut a way through the cocoon at enclosion; Antennae straw coloured to orange-brown, bipectinate in both sexes, with shorter rami in ♀.

**Venation** (fig. 8, after *B. pallida* DIST.): Forewing, Sc free, R1 free arising from distal part of R-Cu cell, M1 + (R5 + (R4 + (R3+R2))), bases of M2 and M3 closed but not fused. A1 in the form of a fold. Discal vein presents as a concave weak vein; Hindwing, Sc anastomizes with Rs forming a small, narrow humeral cell with additional humeral vein. Bases of Rs and M1 as well as bases of M2+M3 closed. 3 anal veins developed but A1 as a fold. Discal vein strongly reduced. Trace of M-branch is completely absent in R-Cu cell in both wings.

**Fore tibia** (figs 5-7): Without epiphysis but with a few robust chetae of unknown significance.

**♂ genitalia** (figs 9-17): Uncus and gnathos well developed. Uncus simple, undivided and flattened, more or less rectangular, longer than broad, distal portion sharply reduced in width with some constriction before rounded apex. Gnathos triangular, exhibiting inter- and intraspecific variation in length, apparently associated with distribution. Valvae flattened, with broad cucullus; sacculus weakly developed and only in *B. dukei*, does the pointed apex protrude beyond the valva margin. Vinculum band-shaped, without distal processes. Juxta plate-like. Aedeagus tubular, relatively slender, with short apical spur and broad dorsal opening of vesica; the latter bag-shaped and lacking any cornuti.

**♀ genitalia** (figs 18-23): Papilla analis short, densely covered with short setae; both pairs of apophysis slender and long, almost equal in size or posterioris a quarter to a half longer; base of apophysis anterioris forked or broadened, more distinct in *B. bifascia* (WLK.) and less so in *B. pallida* DIST., tops of all apophyses finely serrated. Both vaginal plates present, but antevaginal plate only weakly sclerotized, longer than broad with diffuse edges; postvaginal plate distinct, appearing as a transverse sclerite with raised section above ostium. Atrium small, weakly sclerotized; ostium lying in a small, narrow sinus; antrum membraneous, broad, coming into more slender ductus bursae. The latter short, sometimes indistinct, bursa copulatrix pear-shaped to spherical, without any scobination and without signum. Ductus seminalis arising from caudal part of ductus bursae near antrum. In general, the ♀ genitalia are of weak taxonomic importance and can hardly be used for species identification.

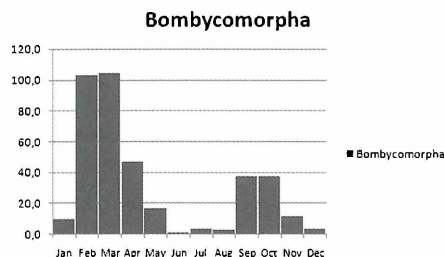
**Diagnosis:** Within its distributional range, *Bombycomorpha* is readily differentiated from other members of the Lasiocampidae. Although the genera *Beralade* WALKER, 1855, *Chionopsyche* AURIVILLIUS, 1909, *Napta* GUENÉE, 1865 and *Sena* WALKER, 1861 include members with similar white groundcolour, they either lack the distinct discal mark, or if present, it is in the form of a stripe, is L shaped or otherwise barely discernable.



**Distribution** (fig. 1): The genus is predominantly South African with a few records extending North into Zimbabwe. There is then a gap in its range until the genus is recorded once again in northern Tanzania and southern Kenya. The absence of records from the intervening countries could, in the case of Mozambique, be attributed to collecting lacunae but not so in the case of Malawi and southern Tanzania. A similarly inexplicable, widely separated population is represented by two specimens collected in northern Namibia.

**Localities:** Refer to individual taxon accounts

**Bionomics. Phenology and habitat association:** Because it occurs in such a variety of habitats and climactic regions, *Bombycomorpha* has, not surprisingly, been recorded in every month of the year. However in the case of *B. bifascia* (Wlk.) and *B. pallida* Dist., they are most abundant during the months of February and March and then again in September and October. During this period, much of the distributional range, with the notable exception of the south western Cape, is when it receives its rain (MUCINA & RUTHERFORD, 2006). *B. dukei* spec. nov. is on the wing from February to May with most records in March and April. This delay in emergence can, again, be attributed to the south western Cape receiving most of its rainfall from May to August (MUCINA & RUTHERFORD, 2006). It is quite evident that flight periods, and by extension, egg laying, are closely linked to precipitation. Records indicate that, at least in the case of *B. bifascia* (Wlk.) and *B. pallida* Dist., they are bivoltine, and pupae of the second generation (after *B. pallida* Dist.) aestivate for some months (TOOKE, 1935). Unlike its congeners, *B. dukei* spec. nov. appears to be single brooded.



In South Africa, *Bombycomorpha* occurs in all but one of the recognized biomes viz. Desert, Fynbos, Succulent Karoo, Nama Karoo, Albany Thicket, Grassland and Savanna biomes (MUCINA & RUTHERFORD, 2006). It is not recorded from [Afro-montane] Forest. In Zimbabwe, the records are from regions which may be classified as Savanna, as too, may the Kenyan records (J. JOANNOU, pers. obs.). The Namibian records are from Abacha which is located in the desert region of Damaraland.

#### Early stages and foodplants

**Egg** (col. pl. 21: 35): Sub cylindrical, of a standing type, with micropylar pole on dorsal surface. The eggs are cemented upright in a single layer cluster often encircling the twig or leaf petiole of the foodplant. Pale when laid but darkening shortly before hatching, in the case of *B. pallida* Dist., 18 to 25 days later (TOOKE, 1935). The chorion is not distinctly patterned. The eggs are laid narrow side down and close together, held thus by a foamy, collateral fluid. They are laid in large numbers, in the case of *B. pallida* Dist., up to 270 (TOOKE, 1935).

**Larva** (col. pl. 211: 21-22, 32-34): The larvae are dark coloured, cylindrical, but not flattened dorso-ventrally as in many other Lasio-campid genera. Linear markings comprise two, broken, parallel lines running dorsally, another unbroken pair dorso-laterally and a single, heavier, lateral line. All lines are greenish-yellow in colour. There are two forms of setae - a pale yellow, almost white and an orange - which, combined, give the larva a yellowish appearance. Early instar larvae with shorter setae appear darker but are otherwise similar. The setae are present on all thoracic and abdominal segments and are grouped dorsally, dorso-laterally and laterally into sparse tufts. The larvae of this genus lack protruding verrucae, transverse setose thoracic bands and lateral lappets. The final instar larvae attain a length of 45-50 mm. Combined with the dark, almost black, head and red prolegs, the larvae exhibit classic aposomatic colouration. The caterpillars are gregarious but sometimes wander off individually in the final instar. This may be a consequence of being parasitised (J. JOANNOU, pers. obs.). PINHEY (1976) states that they live in the silk "tents" associated with the Malacosomini. The validity of PINHEY's statement is questioned due to the previous, but erroneous, inclusion of *Bombycomorpha* in the Malacosominae. Although they do leave silk trails, sometimes matting the surfaces of their feeding areas, true tent building behaviour has not been reported elsewhere nor has it been observed by the authors. They frequently completely defoliate their food plant (TAYLOR, 1953; PICKER et al., 2002) and under these circumstances will resort to cannibalism (TOOKE, 1935). Larval stage (after *B. pallida* Dist.) lasts from 46 to 60 days (TOOKE, 1935).

**Pupa** (col. pl. 21: 23-25, 36-37): Both, *B. bifascia* (Wlk.) and *B. pallida* Dist., are recorded as practicing the primitive trait of ingesting soil in the final instar which is then apparently incorporated into the cocoon (TAYLOR, 1953). The larva transforms into a pupa 16 to 22 days after completion of the cocoon (TOOKE, 1935). Pupation takes place individually or communally in a number of different locations. They have been recorded on the ground under leaf litter and in crevices in the bark of trees - not necessarily that of its food plant. Near human habitation, they prefer ledges and crevices of buildings and frequently, the folds of shade netting or other artificial, man-made materials (J. JOANNOU, pers. obs.). The pupa is enclosed in a strong parchment-like cocoon. TOOKE (1935) states that during its construction: "The fine pieces of soil previously masticated are excreted in a form of a thin paste, and this is plastered over the inside surface of the foundation of silken thread, and the cocoon becomes opaque and brown in colour". Where pupation takes place on the ground, the presumably, sticky saliva exuded by the pronymph during the early stages of construction, permeates through the cocoon allowing soil particles to adhere to the outer surface. Cocoons located on trees or other structures have a smooth outer wall. The pupal surface is smooth, without distinct sculpture; cutis weak, dark yellow, somewhat translucent. Head protruding, adecticous, front oblique. Antennal cases not reaching tips of forewings. Stigmal openings in ellipsoid depression. As with other members of the Poecilocampinae, the pupa has a cremaster, in *Bombycomorpha*, short and flattened, with a few small, heavily sclerotized hooks protruding laterally.

**Foodplants:** The genus is oligophagous, having been recorded as using only two plant genera as a larval foodplant. Both belong to the Anacardiaceae - the multi speciose, indigenous genus *Rhus* (L.) (Sumac) and the exotic Pepper Tree *Schinus molle* L. The latter, extensively used as an ornamental garden subject, may have contributed to *Bombycomorpha*'s occurrence in some unlikely locations through accidentally being transported as eggs or young larvae. AURIVILLIUS (1930) also gives *Piper niger* L. as a host plant. This tree, from which household black pepper is derived, is indigenous to India and it is postulated that AURIVILLIUS misinterpreted *Schinus molle*'s local, common name of Pepper Tree for *Piper niger*.

**Parasitoids and predation** (col. pl. 21: 26-29): The larvae are parasitized by tachinid and muscid flies and also by ichneumonid wasps.



TOOKE (1935) records larval predation by mantids and pentatomid bugs. As the foodplant, *Rhus* (L.), has high tannin levels, it is likely that these toxins are assimilated by the larvae, making them unpalatable, at least to some predators. Killed *B. pallida* DIST. larvae placed on a feeding table were ignored by the primate *Galago moholi* SMITH (Lorisidae). On the other hand, Cuckoos feed regularly on *B. pallida* DIST. larvae while the adults are favoured by a species of insectivorous bat (J. JOANNOU, pers. obs.).

### Key to species

1. Fore wings with distinct transversal linear pattern ..... 2
- Fore wings without pattern, only with discal spot/dot present ..... *B. pallida* DISTANT
2. Smaller, forewing length 11-17 mm in ♂♂ (average 14 mm) and 15-22 mm in ♀♀ (average 19 mm), matt white, discal spot darker than median fascia. In ♂ genitalia sacculus not protruding as a short process beyond valva margin ..... *B. bifascia* (WALKER)
- Larger, forewing length 15-19 mm in ♂♂ (average 16 mm) and 21-24 mm in ♀♀ (average 22 mm), snow white, with conspicuously silky shine, discal spot concolorous with median fascia. In ♂ genitalia sacculus protruding as short process beyond valva margin ..... *B. dukei* spec. nov.

### Enumeration of species

***Bombycomorpha bifascia bifascia*** (WALKER, 1855)

*Artace ? bifascia* WALKER, 1855, List Spec. lepid. Ins. Colln Br. Mus. 6: 1493. Type locality: South Africa. Holotype ♂ (by monotypy) (BMNH) [examined].

*Bombycomorpha nupta* C. & R. FELDER, 1874, Reise östl. Fregatte Novara (Zool.) 2 (Abt.2): 2, pl. 100, fig. 1. Type locality: "Africa mer. Knysna (Trimen)". Holotype ♂ (by monotypy) (BMNH) [examined].

References: AURIVILLIUS, ([1930]: 208, pl. 29 row a); COLLIER (1936:38); TAYLOR (1949: 93, pl. 1: 28; 1953: 161, pl. 1: 9); PINHEY (1976: 119, pl. 22: 496); KROON (1999: 11); VÄRI et al. (2002: 148); NÄSSIG & SPEIDEL (2007: 72).

**Redescription** (col. pl. 21: 1-10, 31): Vestiture and ground colour of wings white to off-white, sometimes with a little cream saturation. Forewing upperside with transverse, linear fasciae either side a discal spot; ante-medial fascia grayish-brown in colour, always present but sometimes indistinct; area between it and the thorax sometimes with grayish-brown suffusion; post-medial fascia similarly coloured and variable in intensity, shape and width. Such variation observed even within a single population (col. pl. 21: 6-7). Discal spot dark brown, distinctly darker than the medias. Hind wings without pattern. Cilia somewhat darker than adjoining areas of the wing, appearing grayish in some specimens. Underside of the wings similarly patterned, but less distinct than upperside. The area bordering the forewing costa brown; ground colour, darker than that of the upperside, suffused with brown in the basal half. Sexual dimorphism limited to the ♀♀ being larger with linear fasciae more weakly defined than in the ♂. The ante-medial fascia often significantly so.

Forewing length: (♂) 11-17 mm, average 14 mm (n = 81); (♀) 15-22 mm, average 19 mm (n = 17)

♂ genitalia (figs 9-10) with weakly developed sacculus, apex not protruding beyond valva margin; valva length greater than twice the width, margins approximately parallel, apex evenly rounded, not tapered. Gnathos narrowly to broadly triangular with the apex pointed, not rounded. ♀ genitalia (figs 18-19) with apophysis anterioris almost of the same length as apophysis posterioris; base of apophysis anterioris forked, with distinct free branch. Postvaginal plate appears as a transverse sclerite with folded cranial margin; it is distinctly higher than in *B. pallida* DIST.

**Diagnosis:** The patterned forewings clearly differentiate this taxon from the un-patterned *B. pallida* DIST. It is distinguished from *B. dukei* spec. nov. by the discal spot being darker than the median fascia, not concolorous, and additionally, in the male genitalia, by the sacculus not protruding beyond the valva margin. The disparity in distribution separates *B. bifascia bifascia* (Wlk.) from its close relative *B. bifascia borealis* subspec. nov. In addition, the ♂♂ of the latter may be distinguished by the shorter valvae of the genitalia

**Distribution** (fig. 2): Other than for an outlying population in Namibia, *B. b. bifascia*'s northerly range is demarcated by a diagonal axis running approximately from latitude 24 degrees South on the eastern coastline to 29 degrees South in the West. It is widespread in this area which encompasses all but the most northerly province of South Africa, Lesotho, Swaziland and southern Mozambique. Although there is no reason why this species should not inhabit Mozambique, there are no records to substantiate its occurrence in that country. The Namibian population, represented by two specimens, is separated from the nearest South African record by a distance of some 1,000 kilometers. It is postulated that such disjunct distribution is the result of accidental introduction of eggs or small larvae imported on its foodplant which is a popular garden subject.

**Localities.** LESOTHO: [Undivided]: Katse. NAMIBIA: [Damaraland District]: Abachaus. SOUTH AFRICA: [Eastern Cape Province]: Algoa Bay [= Port Elizabeth]; Aliwal North; East London; Graaf Reinet; Grahamstown, Resolution; Molteno, Sterkstroom; Port Alfred; ibidem, Blaney; ibidem, Bushman's River Station; ibidem, Kowie River; Port Elizabeth; Queenstown, Umvani; Somerset East, Cookhouse; Stutterheim; Tsitsikama, Goesabos; Willowmore. [Free State Province]: Bloemfontein; Clarens, Golden Gate National Park; Moderpoort, Farm Sumatra; Oranjekrag, H.F. Verwoerd [= Gariiep] Dam; Rosendal, Witteberg; Sasolburg, Farm Elyseum; Zastron, Farm Maghaleen. [Gauteng Province]: Pretoria. [Kwa-Zulu Natal Province]: Durban; ibidem, Kloof; ibidem, Pinetown; Empangeni, Intaba Ingwe Game Ranch; Howick; Louwsburg, Sanyati Nature Farm; Mkuze, Farm Chaos; ibidem, Phinda Nature Reserve; Nongoma, Ngoye Forest; Pietermaritzburg, Cumberland Nature Reserve; Port Shepstone, Uvongo; Umzinto, Vernon Crookes Reserve. [Mpumalanga Province]: Barberton; ibidem, Louws Creek. [Northern Cape Province]: Britstown, Farm Kambro; Graaf Reinet, Farm Paardekraal; Kimberly; Oliphantshoek, Langeberge; Springbok, Namaqualand; Upington, Keimoes; Vanderkloof, P. K. le Roux Dam; [North West Province]: Venterskroon, Farm Buffelskloof; [Western Cape Province]: Aurora, Sandveld Cottage; Betty's Bay, Kogelberg Nature Reserve; Cape Town; ibidem, Melkbosch Strand; ibidem, Milnerton; ibidem, Tygerberg; Clanwilliam, Farm Diepkloof; ibidem, Farm Zeekoevlei; Citrusdal; George, Sasveld; ibidem, Wilderness; Knysna, Belvedere; ibidem, Natures Valley; Malmesbury, Darling; Mosselbay; Outdshoorn; Paarl, Du Toits Kloof; Sedgfield; ibidem, Lake Pleasant; Swellendam, Bontebok National Park; Port Beaufort, Breede River. SWAZILAND: [Piggs Peak District]: Mbabane, Malolotja Reserve.



**Bionomics. Phenology and habitat association:** The fact that the species has been recorded in every month of the year is probably attributable to its wide distribution over a number of differing habitats and climactic conditions. Although TAYLOR (1949: 93) postulated that there were three broods per year, it is more likely that there are only two, but overlapping. TAYLOR (1949: 94) goes on to state: "... from pupae formed in May-June, some adults emerged in September but others in December-January", which suggests a variable aestivation period rather than a third brood.

It is perhaps more practical to define habitat preference in terms of Bioregions (MUCINA & RUTHEFORD, 2006), rather than habitats per se. *B. b. bifascia* (Wlk.) occurs in all barring two - the Central Bushveld Bioregion (SVcb) and Mopane Bioregion (SVmp) - essentially the northern parts of South Africa.

**Early stages and foodplants** (col. pl. 21: 22, 32, 33, 35): The full grown larva measures 45 mm, and is black with narrow longitudinal greenish-white lines. The body is covered with whiteish to yellowish-green protruding hair tufts. The legs, prolegs and claspers are red (TAYLOR, 1953). TAYLOR (1949: 93) gives *Rhus undulata*, *Rh. crenata*, *Rh. macowani*, *Rh. obovata*, *Rh. pyroides*, *Rh. glauca* and *Rh. villosa* as host plants, KROON (1999) adds *Rh. incisa*, *Rh. pyroides* and *Rh. rehmanniana* to the list; *Rhus dentata* is also noted by an unspecified author on the Internet (Wikipedia, undated). The cocoon is typical for the genus.

**Parasitoids and predation:** TAYLOR (1949: 94) notes that a species of Tachinid fly [*Argyrophylax bimaculata* HARTIG] was reared from the larva. Some birds (among them black-crested Cuckoos *Melanolophus serratus*) prey upon the larvae.

**Further material examined** (172 ♂♂, 23 ♀♀): Krugersdorp (JGJ) 19 ♂♂, 5 ♀♀ (4 ♂♂ dissected, JJ Genitalia Preparation Numbers JJGEN131, JJGEN132, JJGEN133, JJGEN134); Pretoria (TMP) 104 ♂♂, 12 ♀♀ (9 ♂♂ dissected, TMP Genitalia Preparation Numbers G310; G350; G16147; G16204; G16205; G16206; G16207; G16208; G16210; 2 ♀♀ dissected, TMP Genitalia Preparation Numbers G506; G16181); Nairobi (NMK) 3 ♂♂; Munich (MWM) 1 ♂; Sasolburg (DMK) 22 ♂♂, 4 ♀♀; Cape Town (JBB) 4 ♂♂, 1 ♀; Cape Town (KG) 3 ♂♂; Cape Town (SAM) 6 ♂♂; Munich (MWM) 6 ♂♂; London (BMNH) 3 ♂♂; Uljanovsk (CVZU) 1 ♂, 1 ♀ (dissected GAV-09-24 ♀).

### *Bombycomorpha bifascia borealis* subsp. nov.

Holotype ♂, KENYA, [Eastern Province]: South Ukambani, near Kibwezi, 6-20.XI.1994, L[icht] f[ang] [= caught at light], leg. Dr. POLITZAR (GP MWM 14956 - MWM) [examined].

Paratypes (2 ♂♂, 2 ♀♀). KENYA, [Eastern Province]: 1 ♂, same data as holotype (MWM); 1 ♀, [Central Province], Machakos, Nov[ember] 1950, leg. E. PINHEY. (dissected, NMK G2009/5; 1 ♀, Nairobi, Thika Road, Oct[ober] 1950, leg. E. PINHEY (NMK). TANZANIA: [Arusha District]: 1 ♂, Arusha, T[anganyika] T[erritory], March 1950, leg. N. MITTON (NMK) [examined].

**Description** (col. pl. 21: 11-12): Externally, the ♂ is similar to the nominotypical subspecies. The ♀ differs slightly in that the forewing upperside ground colour is irrorated with darker scales resulting in a more creamy colour and the costal margin is a light brown. As one of the two ♀♀ available was badly worn, and only a single ♀ was examined, these features should not necessarily be considered as characteristic for the taxon.

Forewing length: (♂) 14-15 mm, average 15 mm (n = 3); (♀) 20 mm (n = 1).

♂ genitalia (fig. 11) with weakly developed sacculus, apex not protruding beyond valva margin; valva length less than twice the width, margins approximately parallel, apex evenly rounded, not tapered. Gnathos narrowly to broadly triangular with the apex pointed, not rounded. ♀ genitalia (fig. 23) with short, concave vaginal plate.

**Diagnosis:** The patterned forewings clearly differentiate this taxon from the un-patterned *B. pallida* DIST. It is distinguished from *B. dukei* spec. nov. by the discal spot being darker than the median fasciae, not concolorous, and in the ♂ genitalia by the sacculus not protruding beyond the valva margin. The disparity in distribution and the shorter valvae of the ♂ genitalia separate *B. bifascia borealis* subsp. nov. from its close relative *B. b. bifascia* (Wlk.).

**Distribution** (fig. 2): A small, disjunct population, known only from northern Tanzania and southern Kenya, the extremes in distribution range separated by a distance of approximately 230 kilometres. The southernmost, being the Tanzanian record, is separated from the northernmost South African *B. b. bifascia* record by a distance of approximately 2,700 kilometres.

**Localities:** KENYA [Central Province]: Machakos; Nairobi, Thika Road. [Eastern Province]: Kibwezi, South Ukambani. TANZANIA [Arusha District]: Arusha.

**Bionomics. Phenology and habitat association:** Data deficient. The three Kenyan records are from October and November while the solitary Tanzanian specimen is dated March. The habitat type around Machakos and Kibwezi is typical savanna but around Nairobi, it is more variable ranging from savanna, through dense woodland and interspersed with remnant forest (J. JOANNOU, pers. obs.).

**Early stages and foodplants.** Unknown.

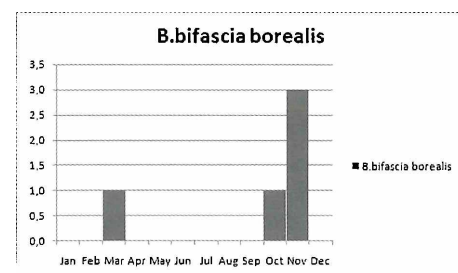
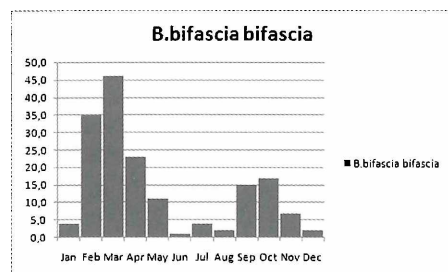
**Parasitoids and predation:** Unknown.

**Etymology:** From Greek βορεινός (fem. βορεινή), northerner, from the North: on account of its northerly distribution in relation to its congeners.

### *Bombycomorpha pallida* DISTANT, 1897

Ann. Mag. Nat. Hist. Ser. (6) 20: 207. Type locality: Transvaal, Pretoria. Lectotype ♂ (designated hereunder) (BMNH) [examined].

**Nomenclatorial notes:** The species was described from an unspecified number of ♂ specimens with the remark "Exp. wings, ♂♂, 35-38 millim". They originated from South Africa's Transvaal Province (now Gauteng Province), Pretoria and were collected by





the author (Distant, 1897: 208). Just two  $\sigma\sigma$  syntypes of *B. pallida* Distant were found in the BMNH collection (M. Honey, pers. comm.). From these two, a  $\sigma$ , in good condition (col. pl. 21: 17), is selected here as the lectotype of the taxon. It bears the following labels (the / indicates a new line): off-white, rectangular, with "Transvaal, / Pretoria. / W.L.Distant" printed thereon; white, rectangular with "Distant Coll. / 1911 - 383" printed thereon; off-white, rectangular with "*B. pallida* / Dist." written thereon in Distant's hand; blue framed, white circle with "SYN-/TYPE" printed thereon. It is supplied with an additional black framed, red, rectangular label bearing the printed text: "Lectotype,  $\sigma$  / *Bombycomorpha* / *pallida* Distant, 1897 / des. JOANNOU & GURKOVICH". The remaining  $\sigma$  syntypical BMNH specimen is considered as a paralectotype of the taxon and is so designated with corresponding label.

**References:** JANSE (1917: 132); AURIVILLIUS ([1930]: 209); TOOKE (1935: 22-28); COLLIER (1936: 39); TAYLOR (1953: 162); PINHEY (1975: 55, pl. XIII: 73); PINHEY (1976: 118, pl. 22: 495); KROON (1999: 59); VÁRI et al. (2002: 148); PICKER et al. (2002: 346, FIG. 6A).

**Redescription** (col. pl. 21: 17-20): Vestiture and ground colour of the upper surface of both wings white, scale density and colour of the latter variable depending on the freshness of the specimen. The colour may turn off-white and the wings may appear translucent. Upperside of wings unmarked except for dark, brownish-grey discal spot and irroration of dark scales near the forewing's apex and adjoining areas of costa and outer margin. Underside of both wings grey in colour, indistinctly reflecting the upperside discal spot and with the costa dark brown. Sexual dimorphism characterised by  $\varphi$  being larger with more robust abdomen but otherwise similar.

Forewing length: ( $\sigma$ ) 13-17 mm, average 15 mm ( $n = 67$ ); ( $\varphi$ ) 18-18-23 mm, average 20 mm ( $n = 20$ ).

$\sigma$  genitalia (figs 12-14) with weakly developed sacculus, apex not protruding beyond valva. Valva margins approximately parallel, length greater than twice the width, apex evenly rounded, not tapered. Gnathos narrowly triangular with apex pointed, not rounded.  $\varphi$  genitalia (figs 20, 21) with apophysis anterioris almost twice as long as apophysis posterioris; base of apophysis anterioris forked but indistinctly so. Postvaginal plate transverse, narrow, inverted V shaped sclerite with smooth margins.

**Diagnosis:** The lack of ante- and post-medial lines on the forewing upperside distinguishes this species from its congeners.

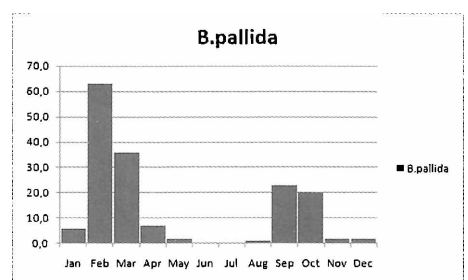
**Distribution** (fig. 3): *B. pallida* Dist. occurs across the northern and eastern parts of South Africa and extends sparingly into Zimbabwe. Although there is a lack of records from Mozambique, it can reasonably be expected to occur in the areas adjoining the eastern borders of the latter two countries. Distribution records are confined to latitudes between 19 to 29° South and longitudes between 27 to 33° East.

**Localities:** LESOTHO: Katse. SOUTH AFRICA: [Free State Province]: Parys, Farm Abel 52; Sasolburg, Farm Elyseum. [Gauteng Province]: Heidelberg, Suikerbosrand Nature Reserve; Hekpoort, Farm Gloster; ibidem, Farm Hekpoort; ibidem, Farm Nooitgedacht; Joannesburg; ibidem, Krugersdorp, Bekkerdan; ibidem, Krugersdorp, Protea Ridge; ibidem, Randburg, Jukskei Park; ibidem, Roodepoort, Walter Sisulu Botanical Gardens; ibidem, Roodepoort, Florida; ibidem, Witkoppen; Magaliesburg, Farm Golden Valley; ibidem, Farm Spring; ibidem, Farm Steenkoppies; Pretoria; ibidem, Pretoria East; ibidem, Pretoria North; ibidem, Roodeplaat Dam; ibidem, Willowglen. [Kwa-Zulu Natal Province]: Empangeni, Intaba Ingwe Game Ranch; Hluhluwe, 5 km North of; Howick; Mkuze, Farm Chaos; ibidem, Phinda Nature Reserve; Manzengwenya; Nongoma, Ngoye Forest. [Limpopo Province]: Chuniesspoort, Farm Warmberg; Dendron, Farm Clodiusheop; Levubu, Farm Arbor; ibidem, Farm Thornhill; Louis Trichardt [= Makhado], Farm Bluegum Poort; ibidem, Mountain Inn; ibidem, Wyliespoort; Magoebaskloof; ibidem, Haenertsburg; Melkriver, Farm Waterberg; Messina [now Mussina], Beitbridge; Potgietersrus [= Mokopane] Percy Fyfe Nature Reserve; Naboomspruit, Nelsvlei Nature Reserve; Ofcolaco, Legalameetse Game Reserve; Tzaneen, Wolkberg Wilderness Reserve; Tohoyandu, Punda Milia (Kruger National Park). [Mpumalanga Province]: Graskop; ibidem, Pilgrim's Rest; Groblersdal, Oudestadproefplaas; Hazeyview, Londolozi Reserve; ibidem, Pretoriuskop (Kruger National Park); Middleburg, Laersdrif; ibidem, Stoffburg. SWAZILAND: [Manzini District]: Impisi. [Sitekei District]: Siteke; ibidem, Jilobi Forest. [Piggs Peak District]: Mbabane, Malagwane Hill; ibidem, Malolotja Reserve. ZIMBABWE: [Manicaland Province]: Butler North; Inyanga [= Nyanga]; ibidem, Juliasdale; Mount Selinda. [Matabeleland North Province]: Gwaai River. [Matabeleland South Province]: Bulawayo.

**Bionomics. Phenology and habitat association**(see [üp. 106](#)): The species is recorded as being on the wing from August to May with two generations per season. The egg stage of the first generation (September) lasts about 18-25 days, and larval development lasts about 40 days. The adults of the first generation appear from late January and lay eggs shortly after emergence. The egg stage of the second generation (late January-February) lasts the same period, but larval development lasts longer - about 50 days, with pupae forming from mid April to beginning of June. They then aestivate until September and then repeat the cycle; In South Africa all records are from Biome types SV [Savanna] and G [Grasslands] (MUCINA & RUTHEFORD, 2006). The localities of Zimbabwean records fall within the savanna biome (J. JOANNOU, pers. obs.).

**Early stages and foodplants** (col. pl. 21: 21, 23, 36, 37): Egg typical of the genus. The larvae are similar to the preceding species but darker, with all longitudinal stripes, barring the two narrow, pale yellow, lateral lines, inconspicuous and often barely visible, the prolegs are red. The young caterpillars have the yellowish hairs much shorter and not so conspicuous so that they appear darker. KROON (1999) gives *Rhus lancea* L., *Rh. zeyheri* SONDER, *Rh. pyroides* BURCH., and *Schinus molle* as the host plants - the species' common name of Pepper-Tree Caterpillar is attributable to its preference for the latter. *B. pallida* Dist. larvae are also recorded feeding on *Rh. dentata* THUNB. and *Rh. leptodictya* DIELS. (J. JOANNOU, pers. obs.). The larvae have 5 instars and pass through 4 moults; the cocoon is oval in shape, about 17 mm in length, 10 mm in diameter, and brown in colour. It is sometimes flattened on the side where it is attached to a solid substrate and if pupation has taken place in the ground, soil particles adhere to its outer surface. Transformation within the cocoon from larva to pupa takes 16 to 22 days from commencement of cocoon construction. The pupa is light yellow when newly transformed and turns brown shortly after (TOOKE, 1935). It measures approximately 15 mm.

**Parasitoids and predation** (col. pl. 21: 28, 29): TOOKE (1935) states that at the time, the only known parasitoid was the tachinid fly *Argyro-phylax bimaculata* HARTIG. More recently, larvae reared from Sasolburg by KROON (J. JOANNOU, pers. com.) were parasitised by *Pales cf. blepharipus* (BRAUER & BERGENSTAMM, 1891) (Tachinidae) and also by an indeterminate species of the Muscidae. The fly lays its eggs on the body of the caterpillar; on hatching, the fly larvae feed upon its tissues and when mature, form oval puparia outside the empty skin





of the caterpillar, but within its cocoon. 30-40% of the caterpillar brood have been known to be parasitized. *Spodromantis gastrica* STOL (Mantidae) and *Glyphus conspicuus* WESTWOOD (Pentatomidae) have been observed attacking the caterpillars of this species (TOOKE, 1935). Despite the assimilated poisons in the caterpillars, they, like other larvae feeding on toxic plants, (eg. *Acraea horta* (L.) (Nymphalidae) are favoured by cuckoos. Diederick's cuckoo, *Chrysococcyx caprius* (BODDAERT) and black cuckoo *Cuculus clamosus* LATHAM (Cuculidae) have been observed feeding on them (J. JOANNOU, pers. obs.). An unidentified, solitary species of insectivorous bat (Microchiroptera) left a pile of *B. pallida* DIST. wings every morning beneath its roost in the garage of one of the authors (J. JOANNOU, pers. obs.).

**Further material examined** (134 ♂♂ and 28 ♀♀): Krugersdorp (JGJ) 36 ♂♂, 5 ♀♀ (2 ♂♂ dissected, JJGEN137; JJGEN138); Pretoria (TMP) 74 ♂♂, 18 ♀♀ (4 ♂♂ dissected, TMP Genitalia Preparation Numbers G311; G490; G523; G16147, 1 ♀ dissected, TMP Genitalia Preparation Number 16148); Nairobi (NMK) 2 ♂♂; London (BMNH) 1 ♂, 1 ♀; Munich (MWM) 3 ♂♂; Sasolburg (DMK) 17 ♂♂, 3 ♀♀; Uljanovsk (CVZU) 1 ♂, 1 ♀ (dissected GAV-09-23♀).

### *Bombycomorpha dukei* spec. nov.

Holotype ♂, South Africa [Northern Cape]: From larva, Studer's Pass, Garies, CAPE, em[er]ged 20.II.[19]83, f[ood]/p[lant] *Rhus undulata*. Leg. N. J. DUKE (TMP) [examined].

Paratypes (50 ♂♂, 10 ♀♀). SOUTH AFRICA, [Northern Cape]: 1 ♂, same data as holotype; 1 ♂, ibidem, 16.II.[19]83; 1 ♀, ibidem, 17.II.[19]83; 1 ♂, ibidem, 1.III.[19]83; 1 ♂, ibidem, 2.III.[19]83; 1 ♀, ibidem, 3.III.[19]83; 2 ♂♂, ibidem, 27.III.[19]83; 1 ♀, ibidem, 1.IV.[19]83; 1 ♀, ibidem, 2.IV.[19]83; 2 ♂♂, ibidem, 3.IV.[19]83 (TMP); 1 ♂, 1 ♀, ibidem, 7.III.[19]83 (BMNH); 1 ♀, ibidem, 3.II.[19]84. ); 1 ♂, ibidem, 2.III.[19]84. (DMK); 2 ♂♂, Lekkersing [Mission], Namaqualand, III.1935, leg. Museum staff, SAM-LEP-A28931 (SAM); 14 ♂♂ (1 dissected - MHUB, GU 2008-39) RSA, Namakwa, Kamieskroon, L[icht] F[ang] [= caught at light], Hotel, 20.III.2005, leg. W. MEY (ZMHU); 2 ♂♂ (1 dissected - MWM, GU 14.957) Südafrika, Western Cape, Umg[ebung] [= environs of] Cederberg, Leeurivier-Ufer [= Bank] (= Grootriver-Ufer), 500-700 m, 20.III.1999, leg. DE FREINA (MWM); 5 ♂♂, Waliekraai District, S30°38.10', E17°35.80', 100 m, 17.-18.III.2004, leg. A. K. BRINKMAN; 2 ♂♂, 1 ♀, Farm Kliprivier, near Nieuwoudville, S31°20.000', E19°07.419', 600 m, 1.IV.2006, leg. A. K. BRINKMAN; 3 ♂♂, Oorlogskloof, S[outh] W[est] of Nieuwoudville, S31°27.179', E19°04.137', 673 m, 22.-23.III.2005, leg. A. K. BRINKMAN (JBB); 4 ♂♂ (1 ♂ dissected, TM Lep. Heter. G16209) [Western Cape] Citrusdal. C.[ape] P.[rovince] 21.IV.-3.V.1974, leg. F. HONIBALL; 1 ♂, Farm Diepkloof near Clanwilliam, 26.IV.2002, to M.[ercury]V.[apour] light, leg. Farm staff; 6 ♂♂, 3 ♀♀ (1 ♀ dissected, TM Lep. Heter. G16149), Farm Zeekoevlei near Clanwilliam, 5.IV.2002, to M.[ercury] V.[apour] light, leg. Farm staff (TMP); 1 ♂, 15 km from Vredendal, Farm Bergkraal, 31°46'15.3"S. 18°29'46.7"E, 1.V.2009, leg. M. FOURIE (KG).

**Description** (col. pl. 21: 13-16, 30): Vestiture and ground colour of upper surface of both wings white, fading with age to off-white. Wings with a distinctly pearlescent sheen, the colour saturated - never opaque. Forewing with two chocolate-brown, linear, median fasciae extending diagonally from costa to inner margin. Between them, a small, concolorous discal spot. The post medial fascia straight, or slightly curved, and often, but not always, kinked a short distance from the inner margin. Ante medial fascia not reaching the costa in a straight line but angled acutely basad. In the ♂, the hind wing bears a lightly suffused, reddish-brown, transverse band of varying density and width. Very faint in some specimens but present in all males examined. Underside of both wings indistinctly reflecting the upperside pattern, ground colour cream with basal half irrorated with darker scales making it appear a "dirty" brown. Sexual dimorphism characterised by ♀ being larger, more robust, with fasciae not as well defined as the ♂, antemedial fascia reduced, often too faint to be seen with the naked eye, and lacking the hindwing transverse band.

Forewing length: (♂) 15-19 mm, average 16 mm (n = 28); (♀) 21-24 mm, average 22 mm (n = 6).

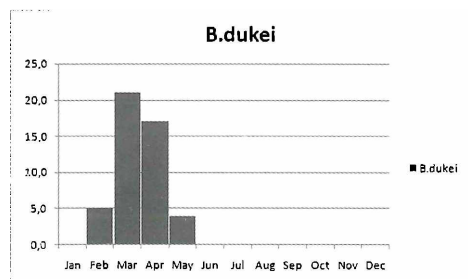
♂ genitalia (figs 15-17) with prominent sacculus, protruding beyond valva and with pointed apex. Valva margins approximately parallel, length greater than twice the width, without apical narrowing. Gnathos narrowly triangular with apex rounded, not pointed. ♀ genitalia (fig. 22) with apophysis anterioris 1/4 longer than apophysis posterioris; base of apophysis anterioris with a very small forked process. Postvaginal plate transverse, narrow, appearing as a triangular sclerite with pointed caudal margin. Ostium laying in a transverse narrow sinus; antrum membranous. Ductus bursae short, sometimes indistinct, bursa copulatrix pear-shaped, without any scobination and lacking a signum.

**Diagnosis:** The presence of forewing ante- and post-medial fasciae eliminates the need to differentiate this species from *B. pallida* DIST. It may be distinguished from *B. bifascia* (WLK.) by the upperside wing's pearlescent sheen; the chocolate-brown fasciae which are more olive-brown in *B. bifascia* (WLK.); the small discal spot of the same colour as the linear fasciae versus the more prominent spot which is darker than the linear fasciae in *B. bifascia* (WLK.); and the "dirty" brown colour covering the basal half of the wings' underside which is lacking, or not as prominent, in its congeners. In the ♂ genitalia, the presence of a prominent, protruding sacculus is diagnostic. In the ♀ genitalia the shape of the vaginal plate is characteristic.

**Distribution** (fig. 4): Restricted to the Namaqualand region of South Africa - a strip of approximately 100 kilometers wide, running along the country's western coastline and falling between latitudes 29 and 32 degrees South - a distance of about 500 kilometers. The species inhabits altitudes between 200 m [Waliekraai] and 700 m [Kamieskroon].

**Localities:** SOUTH AFRICA [Northern Cape]: Garies, Studer's Pass; Kamieskroon; Lekkersing; Nieuwoudville, Farm Kliprivier; ibidem, Oorlogskloof; Waliekraai. [Western Cape]: Citrusdal; ibidem, Cederberg, Leeurivier; Clanwilliam, Farm Diepkloof; ibidem, Farm Zeekoevlei; Vredendal, Farm Bergkraal.

**Bionomics. Phenology and habitat association:** The species is on the wing from February to May. This suggests that, unlike its congeners, *B. dukei* spec. nov. may not be bivoltine. Namaqualand is an arid region mostly falling within the Succulent Karoo Biome [SK], with the type locality itself, classified as SKn3 [Namaqualand; Blomveld]. The bulk of the type locality's rainfall occurs from May to August (MUCINA & RUTHEFORD, 2006).





**Early stages and foodplants** (col. pl. 21: 24, 34): The species was reared by DUKE ex larvae collected from Studer's Pass on *Rhus undulata* - probably var. *celastroides* (SONDER) SCHÖNI, a Namaqualand endemic. The eggs are unknown. From DUKE's photographs, the larvae appear to be characteristic for the genus, varying only in the setae being more orange coloured and more dense. In the linear stripes, *B. dukei spec. nov.* approximates *B. pallida* DIST. where they are less distinct than those of *B. bifascia* (WLK.). Duration of larval instars is unknown. Cocoons, known only from the 3 examples retained by DUKE from his rearing efforts, are of characteristic shape and size. The pupal cases are not available for examination. The cocoons are covered with particles, up to 2 mm in diameter, of what appears to be silica. Being captive specimens, there would not have been a choice of substrate and it therefore cannot be inferred that this is typical for the species under natural conditions. Duration of pupal aestivation is unknown, but presumably the unfavourable eight months until shortly before the next wet season.

**Parasitoids and predation** (col. pl. 21: 26, 27): Through his breeding program, DUKE recovered a tachinid fly, *Pimelimyia russata* (VILLENEUVE, 1943) and an ichneumonid wasp, *Zonocryptus tosquineti* (DALLA TORRE, 1902). *B. dukei spec. nov.* represents the first host record for this wasp (S. VAN NOORT - pers. comm.).

**Etymology:** The species is named after NEVILLE J. S. DUKE, who recognized it as being different when, in 1983, he reared the insect for the first time. The DUKE collection separates this species from *B. bifascia* (WLK.) and bears a series label which reads *Bombycomorpha* sp. NEVILLE JOHN SEYMOUR DUKE, 1 December 1953 - 15 February 1998, was born in Cape Town, South Africa but raised and schooled in Salisbury, Rhodesia [now Harare, Zimbabwe] and saw active service in that country's guerilla war. NEVILLE moved back to Cape Town after Zimbabwe's independence and entered the insurance business. He moved a few times and spent his last years in Swaziland as managing director of Bowring & Minet Swaziland. NEVILLE's (and his father ARTHUR's) meticulous approach to entomology is reflected not only in the beautifully presented drawers of specimens, but also in the well preserved early stages, many beautiful photographs and extensive lists of lepidopteran foodplants that he bequeathed to the Transvaal Museum, Pretoria. A quiet man, with vast knowledge of most insect orders, a more than capable botanist and one of the best field researchers the country has known. His untimely death has left a void in southern African entomology.

**Discussion:** The discovery of a new species within this small, and what was previously thought to be, well-known group, has led to many questions regarding our knowledge of the family as a whole. This revision clearly shows that African Lasiocampidae are still a very poorly understood element of the Macrolepidopteran clade. The many gaps and lack of clarity that exists in their microsystematics requires the use of non-traditional methods if the family is to be properly investigated. *Bombycomorpha* is such a case in point. Classic systematics methods, based on morphological criteria only, are not always reliable in determining the status of individual taxa. In this review, despite the inclusion of biological and ecological comparisons, the status of subspecies *B. bifascia borealis subspec. nov.* remained a point of discussion between the authors for some time. What is needed today, is an approach that combines not only all the factors mentioned but also the use of DNA analysis. Sadly, the two taxa most critically in need of this added investigation, the Namibian *B. bifascia bifascia* (WLK.) and *B. bifascia borealis subspec. nov.* were represented by specimens collected over 50 years ago and unsuitable for sequencing. We believe that only such a holistic approach to future investigations will clarify the tangled web that is Africa's Lasiocampidae species and offer clearer insight towards understanding the relationship between the various genera and suprageneric complexes.

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## GAZETTEER

### KENYA

#### CENTRAL PROVINCE

#### Machakos

#### Nairobi

Thika Road

#### EASTERN PROVINCE

#### Kibwezi

South Ukambani

### LESOTHO

#### UNDIVIDED

#### Butha-Buthe

Monteng Pass

N\* 01°00'N 38°00'E  
R\* 00°45'S 37°00'E  
T 01°29'S 37°16'E  
T\* 01°16'S 36°49'E  
T\* 01°16'S 36°49'E  
R\* 00°00'S 38°00'E  
T\* 02°26'S 38°01'E  
T\* 02°26'S 38°01'E  
N\* 29°30'S 28°15'E  
N\* 29°30'S 28°15'E  
T 28°50'S 28°30'E  
L 28°46'S 28°04'E



<b>Katse</b>	T	29°31'S	28°30'E
<b>NAMIBIA</b>	N*	22°00'S	17°00'E
<i>DAMARALAND DISTRICT</i>	R*	20°30'S	14°30'E
<b>Abachaus</b>	T	19°50'S	16°30'E
<b>SOUTH AFRICA</b>	N*	28°30'S	24°30'E
<i>EASTERN CAPE PROVINCE</i>	T*	27°25'S	30°49'E
<b>Algoa Bay [=Port Elizabeth]</b>	T*	33°58'S	25°35'E
<b>Aliwal North</b>	T	30°41'S	26°42'E
<b>East London</b>	T*	33°00'S	27°54'E
<b>Graaf Reinet</b>	T	32°15'S	24°32'E
Farm Paardekraal	L	32°12'S	24°09'E
<b>Grahamstown</b>	T	33°18'S	26°32'E
Resolution	T	33°10'S	26°37'E
<b>Molteno</b>	T	31°25'S	26°22'E
Sterkstroom	L	31°33'S	26°33'E
<b>Port Alfred</b>	T	33°36'S	26°54'E
Blaney	L	32°51'S	27°31'E
Bushman'S River Station	L	33°42'S	26°40'E
Kowie River	L	33°36'S	26°54'E
<b>Port Elizabeth</b>	T*	33°58'S	25°35'E
<b>Queenstown</b>	T	31°54'S	26°52'E
Umvani	L	32°05'S	27°05'E
<b>Somerset East</b>	T	32°44'S	25°35'E
Cookhouse	L	32°45'S	25°49'E
<b>Stutterheim</b>	T	32°34'S	27°25'E
<b>Tsitsikama</b>	T	33°58'S	23°49'E
Goesabos Forestry	L	33°59'S	23°53'E
<b>Willowmore</b>	T	33°17'S	23°29'E
<i>FREE STATE PROVINCE</i>	R*	29°00'S	26°00'E
<b>Bloemfontein</b>	T*	29°09'S	26°12'E
<b>Clarens</b>	T	28°31'S	28°25'E
Golden Gate [National Park]	L	28°31'S	28°37'E
<b>Modderpoort</b>	T	29°06'S	27°27'E
Sumatra Farm	L	29°04'S	27°24'E
<b>Oranjekrag</b>	T	30°36'S	25°30'E
H-F- Verwoerd [= Gariep] Dam	T	30°36'S	25°30'E
<b>Parys</b>	T	26°53'S	27°30'E
Farm Abel 52	L	26°54'S	27°35'E
<b>Rosendal</b>	T	28°31'S	27°56'E
Witteberge	L	28°34'S	27°58'E
<b>Sasolburg</b>	T	26°51'S	27°52'E
Farm Elysium	L	26°51'S	27°17'E
<b>Zastron</b>	T	30°18'S	27°05'E
Maghaleen Farm	T	30°18'S	27°05'E
<i>GAUTENG PROVINCE</i>	R*	26°00'S	28°00'E
<b>Heidelberg</b>	T	26°30'S	28°23'E
Suikerosrand Nature Reserve	L*	26°31'S	28°13'E
<b>Hekpoort</b>	T	25°53'S	27°36'E
Farm Gloster	L	25°56'S	27°38'E
Farm Hekpoort	L	25°55'S	27°37'E
Farm Nooitgedacht	L	25°51'S	27°32'E
<b>Johannesburg</b>	T*	26°12'S	28°05'E
Krugersdorp, Beckerdan	T*	26°00'S	27°30'E
Krugersdorp, Protea Ridge	L	26°02'S	27°47'E
Randburg, Jukskei Park	T*	26°06'S	27°59'E
Roodepoort, Botanical Gardens	L	26°05'S	27°51'E
Roodepoort, Florida	L	26°09'S	27°54'E
Witkoppen	L	26°02'S	27°58'E
<b>Magaliesburg</b>	T	25°59'S	27°33'E
Golden Valley Farm	L	26°02'S	27°33'E
Spring Farm	L	25°58'S	27°38'E
Steenkoppies	L	26°01'S	27°32'E
<b>Pretoria</b>	T*	25°42'S	28°13'E
Pretoria East	L	25°48'S	28°22'E
Pretoria North	L*	25°39'S	28°10'E
Rodeplaat Dam	L	25°37'S	28°22'E
Willow Glen	T*	25°42'S	28°13'E
<i>KWA-ZULU NATAL PROVINCE</i>	R*	29°00'S	30°00'E
<b>Durban</b>	T*	29°51'S	31°01'E
Kloof	L	29°47'S	30°50'E
Pinetown	L	29°49'S	30°51'E
<b>Empangeni</b>	T	28°46'S	31°54'E
Intaba Ingwe Game Ranch	L	28°39'S	31°44'E
<b>Eshowe</b>	T	28°53'S	31°28'E



<b>Hluhluwe</b>	T 28°01'S 32°16'E
5km North of Hluhluwe	L 27°59'S 32°16'E
<b>Howick</b>	T 29°28'S 30°14'E
<b>Louwsburg</b>	T 27°35'S 31°17'E
Sanyati Nature Farm	L 27°34'S 31°17'E
<b>Mkuze</b>	T 27°38'S 32°03'E
Chaos Farm	L 27°40'S 31°00'E
Phinda Reserve	L 27°47'S 32°21'E
<b>Mselene</b>	T 27°19'S 32°32'E
Manzengwenya Forest	L 27°15'S 32°46'E
<b>Nongoma</b>	T 27°54'S 31°39'E
Ngome Forest	L 27°48'S 31°25'E
<b>Pietermaritzburg</b>	T 29°37'S 30°23'E
Cumberland Nature Reserve	L 29°30'S 30°30'E
<b>Port Shepstone</b>	T 30°44'S 30°26'E
Uvongo	L 30°50'S 30°24'E
<b>Umzinto</b>	T 30°19'S 30°39'E
Vernon Crookes Reserve	L 30°16'S 30°35'E
<i>LIMPOPO PROVINCE</i>	R* 24°00'S 29°00'E
<b>Chuniespoort</b>	T 24°13'S 29°32'E
Warmberg Farm	T 24°13'S 29°32'E
<b>Dendron</b>	T 23°23'S 29°20'E
Farm Clodiusshoop	T 23°23'S 29°20'E
<b>Levubu</b>	T 23°05'S 30°17'E
Arbor farm	L 23°04'S 30°16'E
Thornhill Farm	L 23°07'S 30°21'E
<b>Louis Trichardt</b>	T 23°03'S 29°54'E
Bluegum Poort Farm	L 22°58'S 29°54'E
Mountain Inn Soutpansberg	L 22°59'S 29°56'E
Wyllies Poort, Soutpansberg	L 22°54'S 29°56'E
<b>Magoebaskloof</b>	T 23°52'S 30°01'E
Haenertsburg	L 23°56'S 29°57'E
<b>Melkrivier</b>	T 23°59'S 28°22'E
Waterberg Farm	L 23°55'S 28°04'E
<b>Messina</b>	T 22°22'S 30°02'E
Beit Bridge	L 22°13'S 29°59'E
<b>Mokopane</b>	T 24°11'S 29°01'E
Percy Fyfe Nature Reserve	L 24°02'S 29°10'E
<b>Naboomspruit</b>	T 24°31'S 28°43'E
Nylsvlei	L 24°39'S 28°42'E
<b>Ofcolaco</b>	T 24°05'S 30°22'E
Legalametse Game Reserve	L 24°12'S 30°21'E
<b>Thohoyandou</b>	T 22°57'S 30°29'E
Punda Milia KNP	L 22°41'S 31°01'E
<b>Tzaneen</b>	T 23°47'S 30°07'E
Wolkberg Wilderness Reserve	L 24°03'S 30°00'E
<i>MPUMALANGA PROVINCE</i>	R* 26°00'S 30°00'E
<b>Barberton</b>	T 25°46'S 31°00'E
Louws Creek	L 25°38'S 31°17'E
<b>Graskop</b>	T 24°56'S 30°50'E
Pilgrims Rest	L 24°53'S 30°45'E
<b>Groblarsdal</b>	T 25°09'S 29°23'E
Oudestadproefplas	T 25°09'S 29°23'E
<b>Hazyview</b>	T 25°02'S 31°14'E
Londolozi Reserve	L 24°47'S 31°19'E
Pretoriuskop (KNP)	L 25°10'S 31°15'E
<b>Middelburg</b>	T 25°47'S 29°26'E
Laersdrif	T 25°47'S 29°26'E
Stoffburg	L 25°25'S 28°50'E
<i>NORTH WEST PROVINCE</i>	R* 26°30'S 26°00'E
<b>Venterskroon</b>	T 26°54'S 27°16'E
Farm Buffelskloof	T 26°51'S 27°17'E
<i>NORTHERN CAPE PROVINCE</i>	R* 29°30'S 22°00'E
<b>Britstown</b>	T 30°36'S 23°30'E
Farm Kambro	T 30°36'S 23°30'E
<b>Garies</b>	T 30°35'S 17°56'E
Studers Pass	L 30°24'S 18°05'E
<b>Kamieskroon</b>	T 30°12'S 17°56'E
<b>Kimberley</b>	T 28°44'S 24°46'E
<b>Lekkersing</b>	L 29°00'S 17°06'E
<b>Nieuwoudville</b>	T 31°23'S 19°06'E
Oorlogskloof	T 31°23'S 19°06'E
Klipriver Farm	T 31°23'S 19°06'E
<b>Olifhantshoek</b>	T 27°58'S 22°40'E



Langeberge	L	27°50'S	22°41'E
<b>Springbok</b>	T	29°39'S	17°53'E
Namaqualand	T	29°39'S	17°53'E
<b>Upington</b>	T	28°24'S	21°16'E
Keimoes	T	28°41'S	20°57'E
<b>Van der Kloof</b>	T	30°00'S	24°44'E
P K le Roux Dam	T	30°00'S	24°44'E
<b>Waliekraai</b>	T	30°23'S	17°30'E
<i>WESTERN CAPE PROVINCE</i>	R*	33°30'S	20°00'E
<b>Aurora</b>	T	32°42'S	18°29'E
Sandveld Cottages	L	32°36'S	18°34'E
<b>Betty's Bay</b>	T	34°22'S	18°55'E
Kogelberg Nature Reserve	L*	34°14'S	18°34'E
<b>Cape Town</b>	T*	33°57'S	18°31'E
Melkbosch Strand	L	33°43'S	18°26'E
Milnerton	L	33°53'S	18°29'E
Tygerberg	T*	33°51'S	18°35'E
<b>Citrusdal</b>	T	32°35'S	19°01'E
Cederberg, Leeurivier	T	32°24'S	19°24'E
<b>Clanwilliam</b>	T	32°11'S	18°53'E
Zeekoevlei Farm	T	32°35'S	19°01'E
Diepkloof Farm	L	32°10'S	19°00'E
<b>George</b>	T	33°58'S	22°27'E
Saasveld	L	33°58'S	22°32'E
Wilderness	L	33°59'S	22°34'E
<b>Knysna</b>	T	34°02'S	23°03'E
Belvedere	L	34°02'S	22°59'E
Natures Valley	L	33°58'S	23°34'E
<b>Malmesbury</b>	T	33°27'S	18°42'E
Darling	L	33°23'S	18°23'E
<b>Mossel Bay</b>	T	34°08'S	22°10'E
<b>Oudtshoorn</b>	T	33°55'S	22°12'E
<b>Paarl</b>	T	33°46'S	18°57'E
<b>Port Beaufort</b>	T	34°23'S	20°50'E
Brede River	L	34°24'S	20°49'E
Du Toits Kloof	L	33°46'S	19°11'E
<b>Sedgefield</b>	T	34°00'S	22°48'E
Lake Pleasant	L	34°04'S	22°50'E
<b>Swellendam</b>	T	34°02'S	20°26'E
Bontebok National Park	L	34°03'S	20°27'E
<b>Vredendal</b>	T	31°40'S	18°30'E
Bergkraal Farm	L	31°46'S	18°30'E
<b>SWAZILAND</b>	N*	26°30'S	31°30'E
<i>MANZINI DISTRICT</i>	R*	26°15'S	31°30'E
<b>Manzini</b>	T	26°29'S	31°22'E
Mpisi	T	26°29'S	31°22'E
<b>Siteke</b>	T	26°27'S	31°57'E
Jilobi Forest	L	26°33'S	31°58'E
<i>PIGGS PEAK DISTRICT</i>	R*	26°00'S	31°30'E
<b>Mbabane</b>	R*	26°19'S	31°08'E
Malagwane Hill	L	26°26'S	31°11'E
Malolotja Reserve	L	26°04'S	31°01'E
<b>TANZANIA</b>	N*	06°00'S	35°00'E
<i>ARUSHA DISTRICT</i>	R*	03°20'S	36°45'E
<b>Arusha</b>	T*	03°20'S	36°41'E
<b>ZIMBABWE</b>	N*	19°00'S	29°00'E
<i>MANICALAND PROVINCE</i>	R*	19°00'S	32°30'E
<b>Inyanga</b>	T	18°13'S	32°44'E
Juliasdale	L	18°22'S	32°24'E
<b>Mount Selinda</b>	T	20°27'S	32°43'E
<b>Mutare</b>	T	18°58'S	32°25'E
Butler North	L	19°19'S	32°46'E
<i>MATABELELAND NORTH PROVINCE</i>	R*	19°00'S	27°30'E
<b>Gwaai River</b>	T	18°43'S	27°23'E
<i>MATABELELAND SOUTH PROVINCE</i>	R*	21°00'S	29°30'E
<b>Bulawayo</b>	T	20°09'S	28°35'E



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- Wikipedia, undated. Internet address [http://upload.wikimedia.org/wikipedia/commons/7/73/Bombycomorpha\\_bifascia\\_00.jpg](http://upload.wikimedia.org/wikipedia/commons/7/73/Bombycomorpha_bifascia_00.jpg). Illustration titled Larvae of *Bombycomorpha bifascia* feeding on *Rhus dentata*, Gauteng, South Africa.

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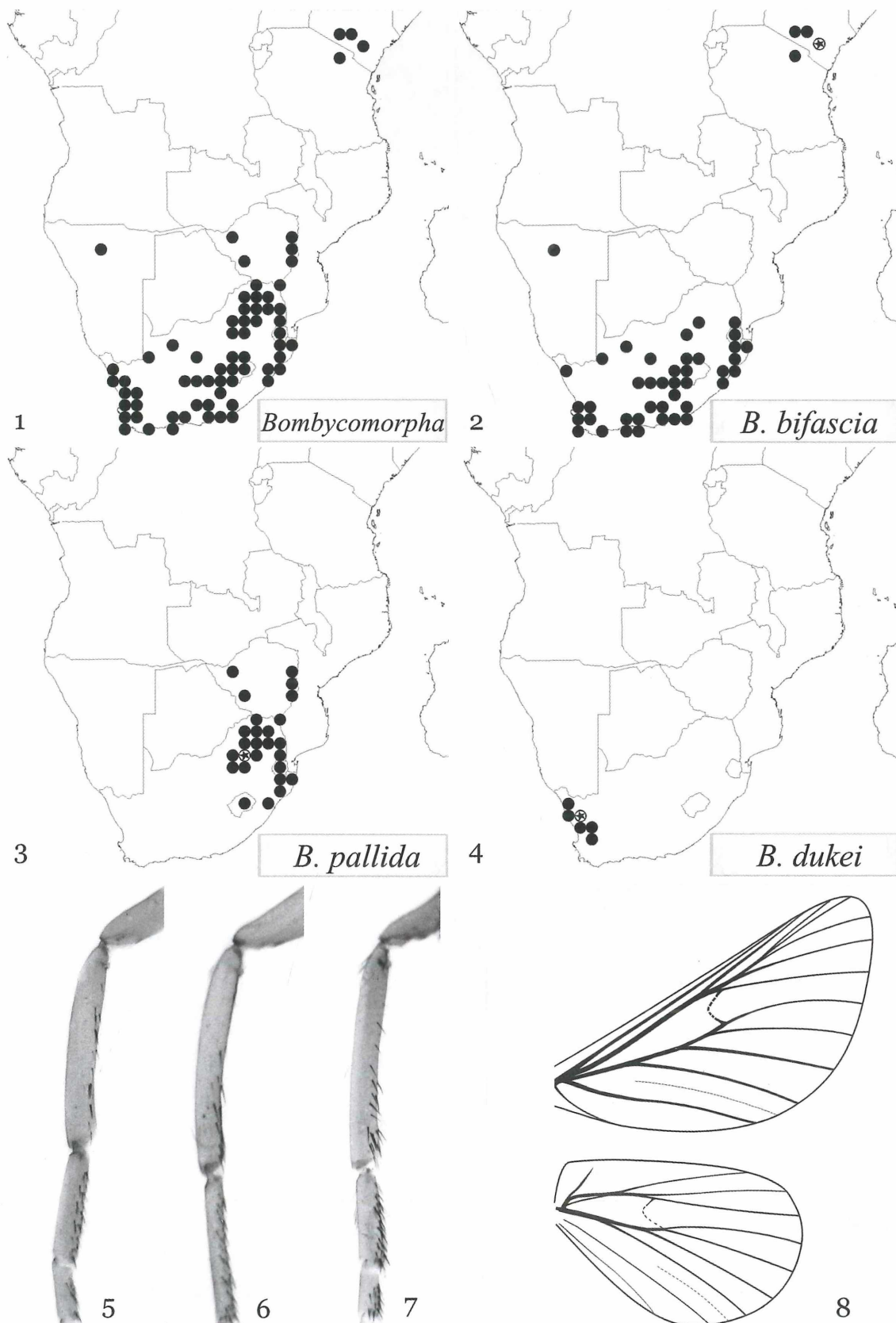


Plate 1

1-4: Distribution maps of *Bombycomorpha* C. & R. FELDER - species

5-7: Forelegs of *Bombycomorpha* ♂♂ showing equipment of tibia: 5. *B. bifascia* (WALKER, 1855), Südafrika, W. Cape, Umg. Swellendam, Bontebok-Nationalpark, 150-300 m, 13.-23.III.1999, leg. DE FREINA (MWM, GU-14.955); 6. *B. dukei* spec. nov., Südafrika, W. Cape, Cederbergregion, Umg. Cederberg, Leeuriver-Ufer (=Grootrivers-Ufer), 500-700 m, 20.III.1999, leg. DE FREINA (MWM, GU-14.957); 7. *B. pallida* DISTANT, 1897, South Africa, KwaZulu-Natal [Province], Mkuze, [Farm] Chaos, 220 m, 32°[00']E, 27°40'S, Acacia Savannah/riverine bush, 20. IX 1997, leg. H. S. STAUDE (coll. JGJ); 8. Wing venation of *B. pallida* DISTANT, 1897.



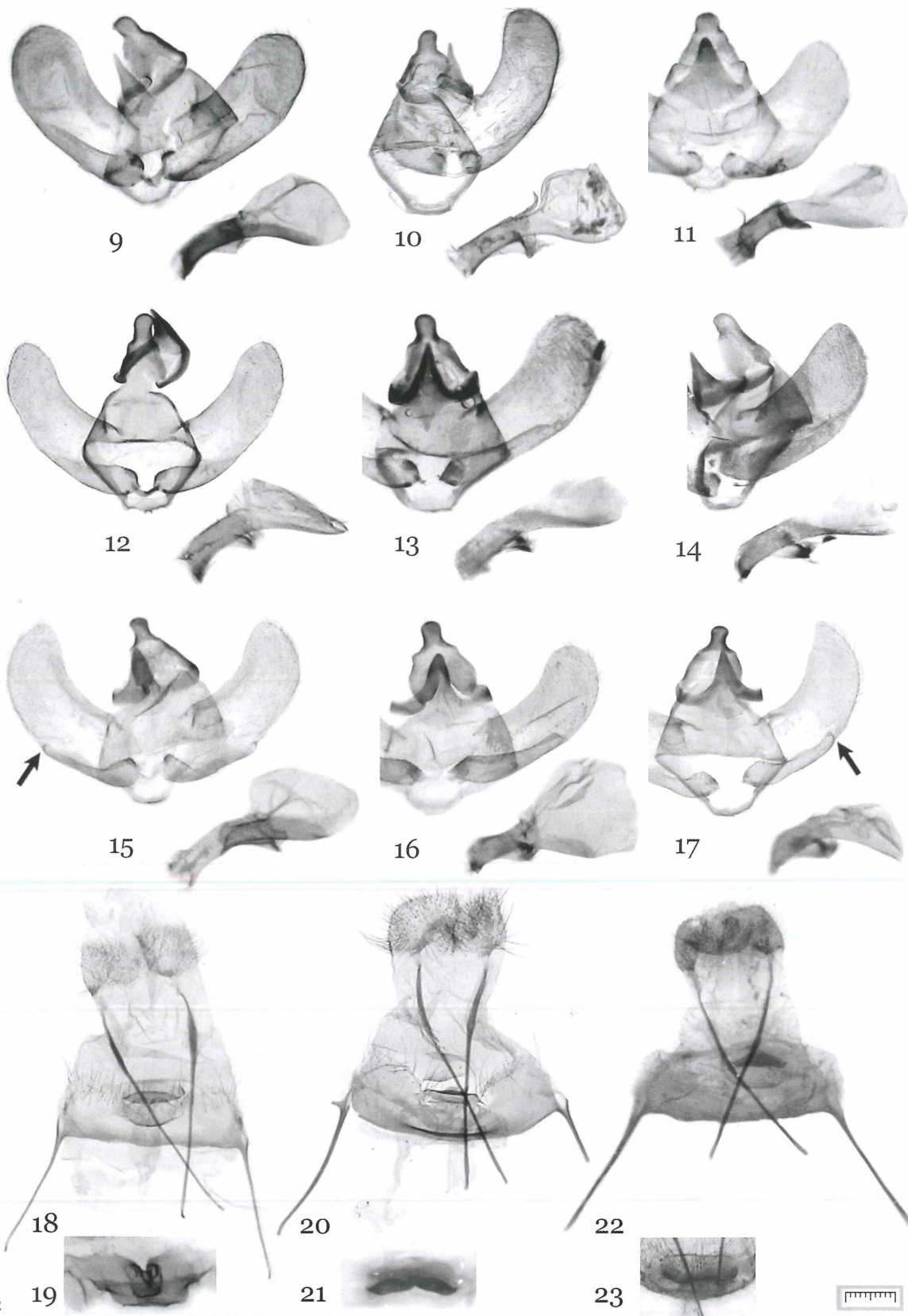


Plate 2

9-23: ♂♂ and ♀♀ genitalia of *Bombycomorpha* C. & R. FELDER - species

9: *B. bifascia* (WALKER, 1855), ♂, Südafrika. W. Cape, Umg. Swellendam, Bontebok-Nationalpark, 150-300m, 13.-23.III.1999, leg. DE FREINA (MWM, GU-14.955). 10: *B. bifascia* (WALKER, 1855), ♂, South Africa, Cape Colony, Graham Stown, Schonland (BMNH, LAS-1353). 11: *B. bifascia borealis subspec. nov.*, holotype ♂, Kenya, South Ukambani near Kibwetzi, 6-20.XI.1994, L[icht]f[ang], leg. Dr. POLITZAR (MWM, GU-14.956). 12: *B. pallida* DISTANT, 1897, ♂, S. Rhodesia, Gwaai R., 17.II.1921, C. E. GODMAN (BMNH, LAS-1354). 13: *B. pallida* DISTANT, 1897, ♂, South Africa, KwaZulu-Natal Prov., Empangeni, Farm Intaba Ingwe, 27°40'S, 32°00', 23.IX.2007, leg. et coll. J. JOANNOU. 14: *B. pallida* DISTANT, 1897, ♂, South Africa, Gauteng Prov., Krugersdorp, Protea Ridge, 26°02'S, 27°47'E, 23.IX.1998, leg. et coll. J. JOANNOU. 15: *B. dukei spec. nov.*, paratype ♂, RSA, Namakwa, Kamieskroon, L[icht]f[ang] Hotel, 20.III.2005, leg. W. MEY (MHUB, GU-2008-39). 16: *B. dukei spec. nov.*, paratype ♂, Südafrika, Western Cape, Cederbergregion, Umg. Cederberg, Leeuwerivier-Ufer (= Grootrivier-Ufer), 500-700 m, 20.III.1999, leg. DE FREINA (MWM, GU-14.957). 17: *B. dukei spec. nov.*, paratype ♂, from larva, Studer's Pass, Garies, CAPE, em[er]ged 7.III.[19]83, f[ood]/p[lant] *Rhus undulata*, N. J. DUKE (BMNH, LAS-1352). 18: *B. bifascia* (WALKER, 1855), ♀, Farm Hekpoort, Hekpoort, Gauteng, 25°55'S, 27°37'E, 1550 m, 15.IX.1996, J. JOANNOU (CVZU, GAV-09-24 ♀). 19: *B. bifascia* (WALKER, 1855), ♀, Upington, Keimoes, 20.II.1961, L. VÁRI (TMP, G506) vaginal sclerites. 20: *B. pallida* DISTANT, 1897, South Africa, OVS, Modderpoort, Sumatra Montane forest, fynbos, 1800 m, 29°04'S, 27°24'E, 18.X.1996, H. S. STAUCHE (CVZU, GAV-09-23 ♀). 21: *B. pallida* DISTANT, 1897, KwaZulu-Natal, Howick, 29°28'S 30°14'E, undated, S. NEVILLE (TMP, G16148) vaginal sclerites. 22: *B. dukei spec. nov.*, paratype ♀, Farm Zeekoevlei near Clanwilliam, 5.IV.2002, to M[ercury] V[apour] light, leg. Farm staff (TMP, G16149). 23: *B. bifascia borealis subspec. nov.*, [Kenya], Machakos, Nov. 1950, E. Pinhey (NMK, G2009/5), vaginal sclerites of paratype. Scale bar: 0,5 mm.



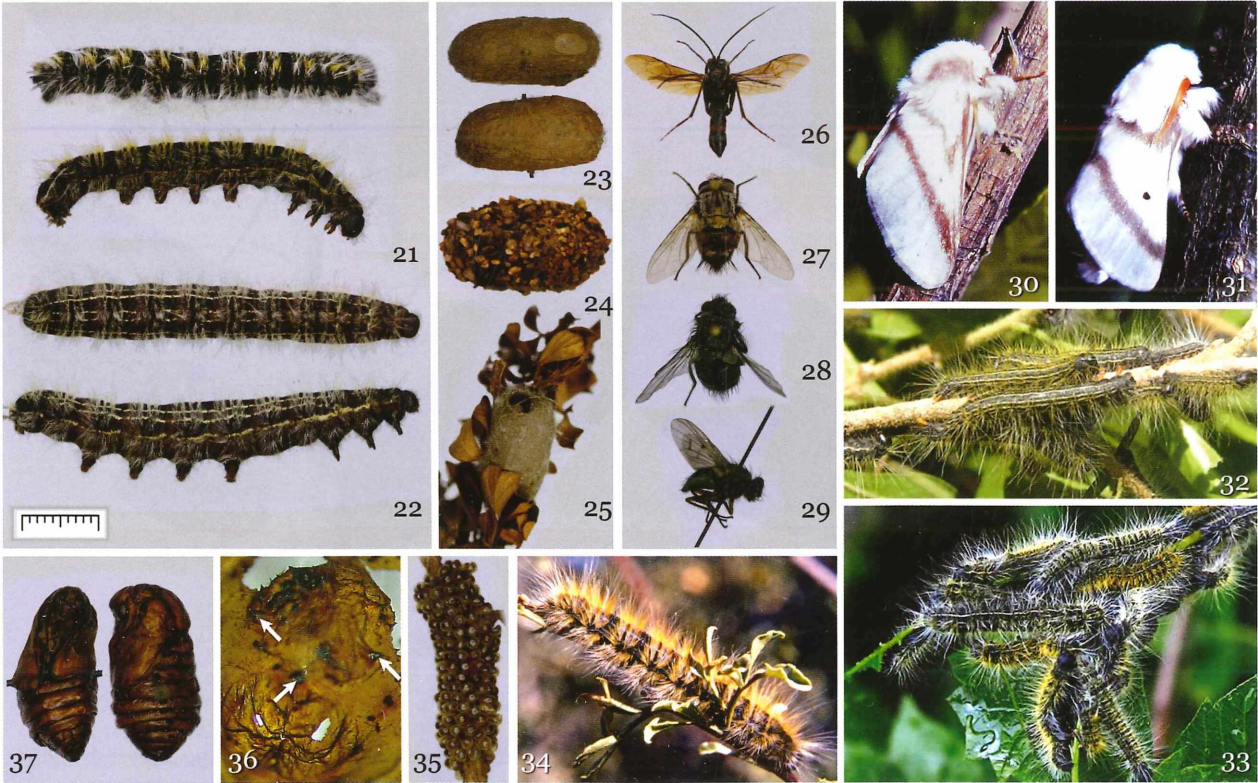
## Legend to Colour plate 21

- 1: *Bombycomorpha bifascia* (WALKER, 1855), holotype ♂ of *B. nupta* FELDER, S. Africa, Knysna (BMNH).
- 2: *B. bifascia* (WALKER, 1855), holotype ♂ of *Artace bifascia* WALKER, 1855, South Africa (BMNH).
- 3: *B. bifascia* (WALKER, 1855), ♂, South Africa, KwaZulu-Natal [Province], Mkuze, [Farm] Chaos, 220m, 32°[00']E, 27°40'S, Acacia Savannah/riverine bush. 20.IX.1997, leg H. S. STAUE (JGJ).
- 4: *B. bifascia* (WALKER, 1855), ♀, S. Africa, Pengel (BMNH).
- 5: *B. bifascia* (WALKER, 1855), ♂, Südafrika. W. Cape, Umg. Swellendam, Bontebok-Nationalpark, 150-300 m, 13.-23.III.1999, leg. DE FREINA (MWM).
- 6, 7: *B. bifascia* (WALKER, 1855), ♂, South Africa, KwaZulu-Natal [Province], Mkuze, [Farm] Chaos, 220 m, 32°[00']E, 27°40'S, Acacia Savannah/riverine bush, 20.09.1997, leg H. S. STAUE (JGJ).
- 8: *B. bifascia* (WALKER, 1855), ♂, Cape Colony, Grahamstown, Schonland (BMNH).
- 9: *B. bifascia* (WALKER, 1855), ♂, [Namibia, Damaraland] Abachaus, 15.IV.1942, leg. G. HOBHIM (TMP).
- 10: *B. bifascia* (WALKER, 1855), ♀, [Namibia, Damaraland], Abachaus, 15.IV.1942, leg. G. HOBHIM (TMP).
- 11: *B. bifascia borealis* **subspec. nov.**, paratype ♂, [Tanzania] Arusha, T[anganyika] T[erritory], III 1950, leg. N. MITTON (NMK).
- 12: *B. bifascia borealis* **subspec. nov.**, paratype ♀, [Kenya], Thika Road, Nairobi, X 1950, leg. E. PINHEY (NMK).
- 13: *B. dukei* **spec. nov.**, holotype ♂, from larva, Studer's Pass, Garies, [Northern] Cape [Province, South Africa], em[erged] 20.II.[19]83, leg. N. J. DUKE, f[ood]/p[lant] *Rhus undulata* (TMP).
- 14: *B. dukei* **spec. nov.**, paratype ♂, South Africa, W[estern] C[ape Province], Oorlogskloof, 673 m, 31°[.27'].17.9°[S. 19°[.04'].13.7°[E, Nieuwoudville, 22.-23.III.2005, leg. A. K. BRINKMAN (JBB).
- 15: *B. dukei* **spec. nov.**, paratype ♂, Studers Pass, Garies, Cape, em. 7.III.1983 ex l., F/P: *Rhus undulata*, N. J. DUKE (BMNH).
- 16: *B. dukei* **spec. nov.**, paratype ♀, from larva, Studer's Pass, Garies, [Northern] Cape [Province, South Africa], em[erged] 17.II.[19]83, leg. N. J. DUKE, f[ood]/p[lant] *Rhus undulata* (TMP).
- 17: *B. pallida* DISTANT, 1897, lectotype ♂, Transvaal, Pretoria, coll. DISTANT (BMNH).
- 18: *B. pallida* DISTANT, 1897, ♂, S. Rhodesia, Gwaai R. 17.II.1921, C. E. GODMAN (BMNH).
- 19: *B. pallida* DISTANT, 1897, ♂, Gloster [Farm], Hekpoort, Gauteng [Province], 25°56'S/27°38', 1300 m, 7.II. [19]96, leg. JOANNOU J. (JGJ). 20: *B. pallida* DISTANT, 1897, ♀, Pretoria, 26.II.1915 (BMNH).
- 21: *B. pallida* DISTANT, 1897, blown larva, Hartbeespoort Dam, Tvl., undated, L. VARI (TMP).
- 22: *B. bifascia* (WALKER, 1855), blown larva, no further data (TMP).
- 23: *B. pallida* DISTANT, 1897, cocoon, Pretoria, undated, L. VARI (TMP).
- 24: *B. dukei* **spec. nov.**, cocoon, Studers Pass, Garies, C. P. (TMP-NJD).
- 25: *B. bifascia* (WALKER, 1855), cocoon, Tygerberg, C.P, IX 1951 (TMP-NJD).
- 26: Parasitic ichneumonid wasp *Zonocryptus tosquineti* (DALLA TORRE, 1902) (Hymenoptera: Ichneumonidae), parasite of *B. dukei* **spec. nov.**, Studer's Pass, Garies, C.P., Em. 7.III.1983 (TMP-NJD).
- 27: Parasitic tachinid fly *Pimelimyia russata* (VILLENEUVE, 1943), (Diptera: Tachinidae), parasite of *B. dukei* **spec. nov.**, Studer's Pass, Garies, C.P., Em. 7.III.1983 (TMP-NJD).
- 28: Parasitic tachinid fly *Pales* cf. *blepharipus* (BRAUER & BERGENSTAMM, 1891) (Diptera: Tachinidae), Elysium, OFS, Sasolburg District, 26°46'51"S, 27°46'13"E, ex larva of *B. pallida* DISTANT, 1897, 01.VII.[19]99, D. M. KROON (DMK).
- 29: Unidentified muscid fly (Diptera: Muscidae), Parasite, Elysium, OFS, Sasolburg District, 26°46'51"S, 27°46'13"E, ex larva of *B. pallida* DISTANT, 1897, 01.VII [19]99, D. M. KROON (DMK).
- 30: *B. dukei* **spec. nov.**, adult ♂ in resting position, [ex?] larva ex Studer's Pass, Namaqualand, X 1982 (DUKE's slide collection in TMP).
- 31: *B. bifascia* (WALKER, 1855), adult ♂ in resting position, Beacon Bay, East London, III 1980 (DUKE's slide collection in TMP).
- 32: *B. bifascia* (WALKER, 1855), larva in nature, S. Africa, Kwazulu-Natal, Louwsberg near Ithala N.R., Sanyati Nature Farm, 1090 m, 27°34'S, 31°17'E, 20.IV 2007, on *Rhus* sp., leg. et photo V. ZOLOTUHN.
- 33: *B. bifascia* (WALKER, 1855), larva in nature feeding on *Rhus dentata*, Gauteng, South Africa ([http://upload.wikimedia.org/wikipedia/commons/7/73/Bombycomorpha\\_bifascia\\_00.jpg](http://upload.wikimedia.org/wikipedia/commons/7/73/Bombycomorpha_bifascia_00.jpg)).
- 34: *B. dukei* **spec. nov.**, larva in nature, Near Garies, C.P, X 1977 (DUKE's slide collection in TMP).
- 35: *B. bifascia* (WALKER, 1855), ova - illustrating close up of cylindrical oviposition pattern, Cape Town, Feb. '52, N. J. DUKE (TMP-NJD).
- 36: *B. pallida* DISTANT, 1897, cremaster of pupa enlarged, Pretoria, L. VARI (TMP).
- 37: *B. pallida* DISTANT, 1897, pupa, Pretoria, L. VARI (TMP).

Scale bar: 10 mm.



Colour plate 21



Legend to the colour plate 21 see p. 117.